

## **COURSE SYLLABUS**

# Mathematical Statistics, 7.5 credits

Matematisk statistik, 7,5 högskolepoäng

Course Code:TMSK17Education Cycle:First-cycle levelConfirmed by:Dean Feb 1, 2017DisciplinaryNatural sciences

Revised by: Director of Education Oct 27, 2021

Valid From:Jan 1, 2022Subject group:MS1Version:4Specialised in:G1F

### **Intended Learning Outcomes (ILO)**

After a successful course, the student shall

Knowledge and understanding

- display knowledge of the most common methods available to graphically and numerically describe a data set

#### Skills and abilities

- demonstrate the ability to perform basic probability calculations
- demonstrate the ability to compute estimates of relevant statistical parameters from a random sample
- demonstrate the ability to perform different types of hypothesis tests and compute the power of such a test in the case of a normal distribution assumption
- demonstrate the ability to use a calculator or software to perform a simple linear regression analysis

### Judgement and approach

- demonstrate an understanding of the concept of random variability judge the benefits and risks of using different statistical models.

### **Contents**

The course focuses on basic proability theory and relevant statistical inference methods that are used when analyzing a data set. Random variability is a fundamental concept.

The course includes the following elements:

- Basic probability theory
- Random Variables
- Discrete and continuous distributions, especially the normal distribution
- The Central limit theorem with applications
- Descriptive statistics
- Point estimates and interval estimates
- Hypothesis testing

- Simple linear regression analysis
- Correlation

# Type of instruction

Lectures and seminars.

The teaching is conducted in English.

## **Prerequisites**

General entry requirements and completed course Single Variable Calculus, 7,5 credits (or the equivalent).

# **Examination and grades**

The course is graded 5,4,3 or Fail.

## Registration of examination:

Name of the Test	Value	Grading
Examination	7.5 credits	5/4/3/U

#### **Course literature**

Literature

The literature list for the course will be provided 8 weeks before the course starts.

Title: Probability, Statistics and stochastic Processes

Author: Peter Olofsson, Mikael Andersson

Publisher: Wiley/Wrox ISBN: 9780470889749